

Name \_\_\_\_\_

Lastname \_\_\_\_\_

Student number

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## Net Computing academic year 2013-14

### Rules

- This is a closed books exam.
- The operation of any electronic device is prohibited (e.g. no calculator, phone or PDA).
- Answer the questions being *precise, complete, and formal*.
- Write as *clearly* as possible, both in terms of handwriting and wording.
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### Questions

1. Illustrate the general structure of a Remote Method Invocation architecture. Use Java RMI as an example for the explanation.
2. Corba, Java Serialization and XML are examples of data marshalling. Define the concept of marshalling and explain the similarities and differences of the three approaches.
3. What are the three phases in optimistic concurrency control in distributed transactions? In which case is the last phase unnecessary? How does backward validation work? Can starvation occur?
4. How would one implement a publish-subscribe mechanism in a distributed fashion? Let say, you have to develop a monitoring system for a large data center, and you have to ensure that no events are lost. What will you do?
5. Please describe the concepts of "futures" and "promises". How would one use "promise" to wrap existing (non-future callback-based) asynchronous code into a "future" one?